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EXAMINER	
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ART UNIT	PAPER NUMBER
2471	

NOTIFICATION DATE	DELIVERY MODE
02/18/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/699,603	JUDD, JOSH	
	Examiner	Art Unit	
	MOHAMMAD S. ADHAMI	2471	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18,55-63 and 65-106* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,55-63, and 65-106* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's amendment filed 12/7/2010 is acknowledged.
- Claims 1,55,73,82,89, and 90 have been amended.
- Claims 19-54, and 64 have been cancelled.
- Claims 1-18,55-63, and 65-106 are pending.
- Applicant's response and amendment with respect to the rejection of claims 90-106 under 35 USC 101 and the rejection of claims 73-89 under 35 USC 112 1st paragraph is noted and the rejection is withdrawn.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2-18,65-68,82-85, and 99-102 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 6 and 9, it is unclear if the limitation "a frame' refers to the same frame or to two different frames.

Claims 11,13,65,67,82,84, 99, and 101 recite "normal routing rules." What are "normal routing rules?"

Claims 2-12,14-18,66,68,83,85,100, and 102 are rejected because they depend from a rejected claim.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,8-13,18,55,62,63,65-67,72,73,80-84,89,90,97-101, and 106 rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US App. 6,538,997) in view of Ramanan (US App. 2003/0095509).

Re claim 1:

Wang discloses *a plurality of ports* (Fig.2 ref. node - where the nodes have ports and Col.3 lines 38-39 through respective nodes and ports).

Wang further discloses *a fabric manager coupled to the plurality of ports configured to add information to the payload of a frame* (Fig.5b – where the trace request/response is part of the payload and is added by a fabric manager of a bridge Fig.4 and Col.4 lines 34-35 trace response node).

Wang further discloses *a plurality of interconnected switching units coupled to the plurality of ports, each switching unit performing routing and switching functions* (Fig.2 where the nodes are interconnected switching units coupled to the plurality of ports on the nodes).

Wang further discloses *the fabric manager configured to add information to the payload of the frame, the information including receive port identify, transmit port identity, switch identity, and data about each of the traversed*

switching units and the interconnections between the traversed switching units when a frame traverses multiple switching units (Col.3 lines 65-67 the bridges will add their respective identifiers such as their respective MAC addresses, or other internal identifiers and Col.4 lines 14-20 The data added to the packet include an identifier of the node. The data may include other information such as a port on the node at which the trace packet was received and transmitted and Col.5 lines 19-27 the layer-2 trace can be used to discover the Path MTU. This information can be used to optimize link efficiency and utilization in communication sessions. Another potential use for the layer-2 trace is the identification of VLANs (port, VLAN identifiers, etc.)).

Wang does not explicitly disclose *multiple switching units in a switch, each switching unit performing routing and switching functions.*

Ramanan discloses *multiple switching units in a switch, each switching unit performing routing and switching functions* (Fig.1 ref.100 is a switch and ref. 0-7 are switching units).

Wang and Ramanan are analogous because they both pertain to data communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to include multiple switching units in a switch as taught by Ramanan in order to provide central control and connect network devices to a network.

Re claims 55 and 90:

Wang discloses *adding information to the payload of a frame received by a switch* (Fig.1 – where the nodes are switches and Fig.5b – where the trace request/response is part of the payload and is added by a fabric manager of a bridge Fig.4 and Col.4 lines 34-35 trace response node).

Wang further discloses *a plurality of interconnected switching units, each switching unit performing routing and switching functions* (Fig.2 where the nodes are interconnected switching units coupled to the plurality of ports on the nodes).

Wang further discloses *the information including receive port identify, transmit port identity, switch identity, and data about each of the traversed switching units and the interconnections between the traversed switching units when a frame traverses multiple switching units* (Col.3 lines 65-67 the bridges will add their respective identifiers such as their respective MAC addresses, or other internal identifiers and Col.4 lines 14-20 The data added to the packet include an identifier of the node. The data may include other information such as a port on the node at which the trace packet was received and transmitted and Col.5 lines 19-27 the layer-2 trace can be used to discover the Path MTU. This information can be used to optimize link efficiency and utilization in communication sessions. Another potential use for the layer-2 trace is the identification of VLANs (port, VLAN identifiers, etc.)).

Wang does not explicitly disclose *a plurality of switching units within a switch, each switching unit performing routing and switching functions.*

Ramanan discloses *a plurality of switching units within a switch, each switching unit performing routing and switching functions* (Fig.1 ref.100 is a switch and ref. 0-7 are switching units).

Wang and Ramanan are analogous because they both pertain to data communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to a plurality of switching units in a switch as taught by Ramanan in order to provide central control and connect network devices to a network.

Re claim 73:

Wang discloses *a plurality of ports* (Fig.2 ref. node - where the nodes have ports and Col.3 lines 38-39 through respective nodes and ports).

Wang further discloses *a plurality of switching units interconnecting the plurality of ports, each switching unit performing routing and switching functions* (Fig.2 where the nodes are interconnected switching units coupled to the plurality of ports on the nodes).

Wang further discloses *adding information to the payload of a frame received by the switch* (Fig.1 – where the nodes are switches and Fig.5b – where the trace request/response is part of the payload and is added by a fabric manager of a bridge Fig.4 and Col.4 lines 34-35 trace response node).

Wang further discloses *the information including receive port identify, transmit port identity, switch identity, and data about each of the traversed*

switching units of the plurality of switching units and the interconnections between the traversed switching units when the frame traverses multiple switching units (Col.3 lines 65-67 the bridges will add their respective identifiers such as their respective MAC addresses, or other internal identifiers and Col.4 lines 14-20 The data added to the packet include an identifier of the node. The data may include other information such as a port on the node at which the trace packet was received and transmitted and Col.5 lines 19-27 the layer-2 trace can be used to discover the Path MTU. This information can be used to optimize link efficiency and utilization in communication sessions. Another potential use for the layer-2 trace is the identification of VLANs (port, VLAN identifiers, etc.)).

Wang does not explicitly disclose *a plurality of switching units within a switch, each switching unit performing routing and switching functions.*

Ramanan discloses *a plurality of switching units within a switch, each switching unit performing routing and switching functions* (Fig.1 ref.100 is a switch and ref. 0-7 are switching units).

Wang and Ramanan are analogous because they both pertain to data communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to a plurality of switching units in a switch as taught by Ramanan in order to provide central control and connect network devices to a network.

Re claims 8,9,62,63,80,81,97, and 98:

Wang discloses *adding information to the payload of the frame when the frame is traveling from the original source to the original destination and from the original destination to the original source* (Col.3 lines 32-39 This response packet includes information regarding the path that was taken by the respective trace packets and Col.3 lines 65-67the bridges will add their respective identifiers such as their respective MAC addresses, or other internal identifiers and Col.4 lines 14-20 The data added to the packet include an identifier of the node. The data may include other information such as a port on the node at which the trace packet was received and transmitted).

Re claim 10:

Wang discloses *a node device connected to a port and the fabric manager transmitting the frame to the node device* (Fig.1 where frames are transmitted between the nodes and devices are connected to the nodes and Fig.4).

Re claims 11,65,82, and 99:

Wang discloses *selecting the transmit port based on normal routing rules used for frames not having information added to the payload of the frame* (Fig.2 where the packets are routed based on information in the packet and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).

Re claims 12,,66,83,99, and 100:

Wang discloses *selecting the transmit port based on source routing rules used for frames having information added to the payload of the frame* (Fig.2 where the packets are routed based on information in the packet and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet and Col.1 lines 45-60 the packet has a layer-2 payload that includes an address corresponding to a node in the set of destination nodes).

Re claims 13,67,84, ad 101:

Wang discloses *using normal routing rules used for frames not having information added to the payload of the frame if the source routing information does not indicate a device directly connected to the switch* (Col.3 lines 58-59 This MAC address is interpreted as a sink and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).

Re claims 18,72,89, and 106:

Wang discloses *determining if the switch was the original source of the frame, and if so, to capture the frame* (Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).

3. Claim 2-7, 56-61,74-79, and 91-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Ramanan as applied to claims 1, 55,73, and 90 above, and further in view of Perlman (US 5,844,902) and Soumiya (US 6,671,257).

Re claims 2-7, 56-61,74-79, and 91-96:

As discussed above, Wang meets all the limitations of the parent claim.

Wang does not explicitly disclose *information including the link cost of a link.*

Perlman further discloses *information including the link cost of a link* (Col.5 lines 40-43 "The explorers may also accumulate other data, such as the maximum packet size along the path followed or the "cost" (expediency) of those paths").

Wang and Perlman are analogous because they both pertain to data communication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to include information including the link cost of a link as taught by Perlman in order to obtain information to determine a route allowing for the most efficient use of resources.

Wang does not explicitly disclose *the information including transmit and receive rates based on a first defined period and a second defined period that is greater than the first defined period and the number of frames and words transmitted and received.*

Soumiya discloses *the information including transmit and receive rates based on a first defined period and a second defined period that is greater than the first defined period and the number of frames and words transmitted and received* (Fig.26 ref. 8~9 is a rate field, Col.26 lines 21-23 the rate changing unit may change the explicit rate that the rate calculating unit calculates at a predetermined ratio and Col.35 lines 21-36 the prolongment of the observation period means that an interval between ER calculation times becomes longer. The capability for calculating the ER in an observation period which is shorter than a specified observation period and Col.7 lines 27-28 "an arrived cell number counter for counting a number of arrived cells in correspondence with an output channel" where calculating the transmission rate also contains information about the amount of frames and words transmitted).

Perlman and Soumiya are analogous because they both pertain to network communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Perlman to include rate information as taught by Soumiya in order to more efficiently choose a path for transmission and to minimize congestion.

4. Claims 14,16,32,34,50,52,68, and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Ramanan as applied to claims 1,11,55, 65,73,82,90, and 99 above, and further in view of Fredericks (US 6,347,334).

Re claims 14,16,32,34,50,52,68, and 70:

As discussed above, Wang meets all the limitations of the parent claim.

Wang does not explicitly disclose *a fibre channel switch, a frame addressed to a well known address, determining the true destination address by retrieving data from the payload, and the frame being an extended link service frame.*

Fredericks discloses *a fibre channel switch, a frame addressed to a well known address, determining the true destination address by retrieving data from the payload, and the frame being an extended link service frame* (Col.1 lines 29-30 "The Fibre channel switch" and Col.6 lines 29-31 "the RNID ELS message is sent to the Fabric Controller at the address hex "FFFFFD" as is well known" and Table 1 and Col.5 lines 45-46 "The first word in the payload specifies the Command Code" and Col.5 lines 9-10 the payload of the accept message includes node identification data).

Wang and Fredericks are analogous because they both pertain to network communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to include a fibre channel switch and ELS message as taught by Fredericks in order to use a standard network setup and standard and well-known messaging.

5. Claims 15,33,51, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Ramanan as applied to claims 1, 55,73, and 90 above, and further in view of Lee (US App. 2003/0099194).

Re claims 15, 69,86, and 103:

As discussed above, Wang meets all the limitations of the parent claim.

Wang does not explicitly disclose *transmitting frames over a plurality of equal cost routes*.

Lee discloses *transmitting frames over a plurality of equal cost routes* (Para.[0005] "partially use a number of shortest paths having the same cost, that is, an equal cost multipath").

Wang and Lee are analogous because they both pertain to network communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wang to transmit data over equal routes as taught by Lee in order to balance the load on the paths and reduce congestion.

6. Claims 17,35,53, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Ramanan and Suzuki as applied to claims 1, 55,73, and 90 above, and further in view of Hongal (US App. 2005/0053006).

Re claims 17, 71,88, and 105:

As discussed above, Wang meets all the limitations of the parent claim.

Wang does not explicitly disclose *if a switch is the original destination of a frame, then modifying the frame to return it to the original source*.

Hongal discloses *if a switch is the original destination of a frame, then modifying the frame to return it to the original source* (Para.[0030] "The source MAX address is set to the system MAC address of the target network node (i.e. the target MAC address)" and "the destination MAC address in the frame's header could be set to the originator MAC address").

Wang and Hongal are analogous because they both pertain to network communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Perlman to include modifying the frame to return to the original source as taught by Hongal in order to return information about a path to the source and therefore allow the source to choose an optimal path.

Response to Arguments

1. Applicant's arguments with respect to claims 1,55,73, and 90 have been considered but are moot in view of the new ground(s) of rejection.

2. Applicant's arguments filed 12/7/2010 have been fully considered but they are not persuasive.

In the remarks, Applicant contends claims 11-14,65-68,82-85, and 99-102 are not indefinite because the specification discloses a routing protocol called Fibre Channel Shortest Path First (FSPF).

The Examiner respectfully disagrees. Although the specification discloses FSPS, the term "normal routing rules" is not clearly defined. Therefore the term is indefinite under 35 USC 112 2nd paragraph.

In the remarks, Applicant contends Wang teaches sending trace packet only from the source to the destination or only from the destination to the source.

The Examiner respectfully disagrees. Wang does disclose sending a trace packet from a destination to a source and from the source to the destination (Col.1 lines 23-24 the network manager causes the mtrace to start at the destination of the path that is desired to be diagnosed). The trace response sent from the destination also includes the information in the trace packet (Col.3 lines 32-39 This response packet includes information regarding the path that was taken by the respective trace packets).

In the remarks, Applicant contends Wang does not use normal routing rules for frames not having information added to the payload of the frame if the source routing information does not indicate a device directly connected to the switch.

The Examiner respectfully disagrees. Wang does disclose normal routing rules for frames not having information added to the payload of the frame if the source routing information does not indicate a device directly connected to the switch (Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the

contents of the packets and determine the actions that they should take upon the packet). The packet is forwarded based on the information it contains.

In the remarks, Applicant contends Wang does not disclose capturing a frame if switch receiving the frame is the original source of the frame.

The Examiner respectfully disagrees. Wang does disclose capturing a frame if switch receiving the frame is the original source of the frame (Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet). If a packet is transmitted back to the source, then once the source receives the packet it will capture the packet. A packet reaches its destination based on information the packet contains, as shown in Col.3 lines 62-64. This type of forwarding information is contained in a packet, which the bridge in Wang looks at in order to determine how to forward the packet.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schaller (US 7,289,436) shows multiple switching units in a switch, where the switching units perform routing and switching functionality.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD S. ADHAMI whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad S Adhami/
Examiner, Art Unit 2471

/Chi H Pham/
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